O. NEONATAL TRANSPORT

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INDICATIONS FOR NEWBORN TRANSPORT

Principal Determinants in the Decision to Transport

In an environment with limited capability to care for sick or high-risk babies, principles for making decisions about transport should be worked through in advance and understood by all obstetrical and neonatal personnel. The first consideration is what is best for the baby medically. In making this determination, the following questions should be considered.

- Where can the specific medical needs of this baby best be met?
- What subspecialty consultants may be needed, and where are they most readily available?
- Where is the full support from ancillary services (X-ray, laboratory, respiratory therapy, special procedures, etc) available 24 hours a day, 7 days a week? Will any or all of these be needed?
- What complications may possibly arise, and where can these be most quickly and safely corrected?
- Do the benefits of transport outweigh the risks involved?

It is also important to consider what is best for the parents and family:

- Which of the alternative locations for the baby allows the best early contact between mother and child, and least disrupts family life?
- Which hospital makes available the social services this family seems to need?

In the face of scarce resources, it is also necessary to weigh what is best for the sponsoring institution (ie, the Indian Health Service) in terms of utilizing existing services and minimizing the costs for the necessary medical care.

Neonatology Consultation

Consultation is invaluable and may be an alternative to transport in some cases. In others, it will be the first step in what ultimately becomes a safe and smooth transport to a high-risk center. Neonatalogy consultation should be sought during the neonatal period when:

- The infant weight is less than 2000 grams (or approximately four pounds).
- The infant is less than 36 weeks gestation.
- The infant suffered significant perinatal distress (ie, Apgars less than 4 at one minute and less than 6 at 5 minutes).
- The infant is small-for-gestational age (ie less than 2000 grams at term or below the tenth percentile on the intrauterine growth charts).
- The infant shows signs of respiratory distress of cyanosis beyond two hours of age.
- The infant shows early-onset jaundice (ie, within the first 12 hours of life).
- The infant has one or more major congenital malformations.

Absolute Indications for Newborn Transport

Certain conditions require the full medical capabilities of a tertiary center for neonatal care. These include the following:

- Infants weighing less than 1500 grams or less than 33 weeks gestation.
- Severe birth asphyxia (ie, Apgars 0-3 at one and/or 5 minutes).
- Infants with severe respiratory distress (ie, requiring greater than 60% oxygen or any form of assisted ventilation including CPAP).
- Infants with cyanosis unresponsive to oxygen therapy or suspected of having congenital heart disease.
- Infants with congenital malformations requiring immediate surgery.
- Infants with hydrocephalus, microcephaly, intractable apnea or seizures.
- Infants with suspected sepsis, neonatal hepatitis or meningitis.

STABILIZATION AND PREPARATION FOR NEWBORN TRANSPORT

Stabilization: The objectives of stabilization by definition are to aid in the restoration of homeostasis; to return to within the normal range; and to provide the patient with additional reserve or ability to respond to changes in the environment.

A stabilized newborn is characterized by the following:

- Normal temperature (rectal 98.0 – 98.6; skin 97.5 – 97.9)
- Normal heart rate (between 120 – 140/minute)
- Normal blood pressure (greater than 45 mm Hg systolic if less than 1250 grams and less than 34 weeks; otherwise greater than 50 mm Hg)
- Adequate oxygenation, ventilation and acid-base balance (i.e. normal blood gases)
- PaO_2: Arterial oxygen tension greater than 50 mm Hg;
  capillary PO_2 greater than 35 mm Hg
- PO_2: 35-45 mm Hg
- pH: Greater than 7.28 but less than 7.45
- HCO_3: 25±3 or BE: 0±3
- Normal tissue perfusion (no mottling, no peripheral cyanosis, and capillary refill time after pressure balancing less than 3 seconds)
- Normal blood sugar (above 45 mg percent but below 150 mg percent)
- Normal hematocrit (above 45% but below 65%)

Inherently unstable conditions in the neonate which require especially close monitoring for detection of deviations from normal and thus early intervention:

- Very low birth weight infants (less than 1500 grams)
- Extremely premature infants (less than 32 weeks gestation)
- Certain surgical conditions: esophageal atresia, TE fistula, diaphragmatic hernia, bowel obstruction, bowel perforation, omphalocele, and gastroschisis
- Pneumothorax or other forms of pulmonary air leak
- Cyanotic congenital heart disease
- Sepsis and/or meningitis

Special steps to be taken before transport:

- Secure an airway if there is any question of need for assisted ventilation
- Secure an IV access for provision of fluids, electrolytes, medications or blood products if needed
- Decompress any pneumothorax with chest tube
- Empty stomach and continue decompression with indwelling NG or OG tube
- Discuss transfer with parents, obtain signed consent form, and have copies of maternal and newborn records plus laboratory results, X-rays and maternal blood (15 cc in red-top tube) ready to go with baby

Information needed at time of arranging transport:

- Patient's name, sex, birth weight, gestational age, date of birth, current weight
- Indication(s) for transport, provisional diagnosis
- Parents' name and telephone number
- Referring hospital and physician's telephone numbers
- Crucial laboratory study results (especially blood gases, glucose, Hct)
- Specifics of therapy previously or presently being administered, ie, IV amount and content, O_2 concentration, ventilator settings, procedures performed
- Results of X-rays and other special tests performed
- Crucial aspects of pregnancy, labor and delivery histories, especially as they reveal hereditary disease, complications that may affect the baby, risk factors for sepsis, degree of asphyxia and/or birth injury suffered